Small Business Innovation Research/Small Business Tech Transfer

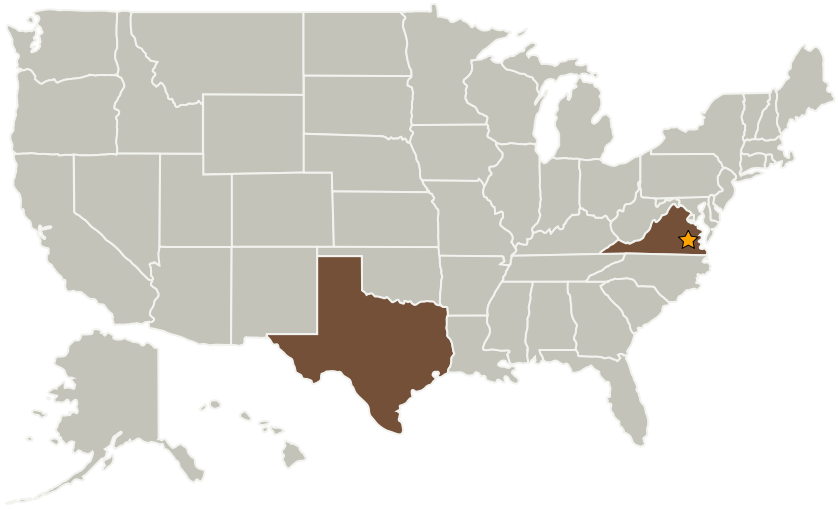
Novel Color Depth Mapping Imaging Sensor System, Phase I

Completed Technology Project (2005 - 2005)

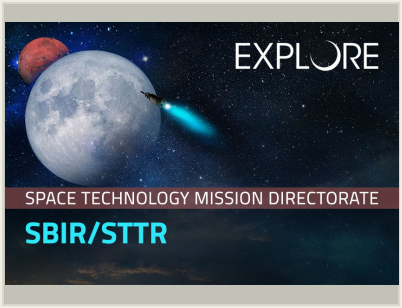
Project Introduction

Autonomous and semi-autonomous robotic systems require information about their surroundings in order to navigate properly. A video camera machine vision system can supply position information of external objects, but no range information. Ideally, a system that, in one package, provides 3-dimensional relative information about external objects is needed. To this end, Nanohmics will develop a lightweight, compact, low-power, low-cost modular sensor system that produces a color depth map of the surroundings. By combining a color optical camera, a multi-element range finding or LiDAR system, and digital processing electronics, a single low-cost sensor system can be designed to provide relative position and anti-collision information. For additional reliability, the design will not involve any moving parts. By making this sensor system modular, and with a simple-to-use serial interface, it could be used in many varying robotics applications including, but not limited to, autonomous planetary surface rovers and semi-autonomous free-flying space station inspection robots.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Nanohmics, Inc.	Supporting Organization	Industry	Austin, Texas



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

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Primary U.S. Work Locations	
Texas	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Andrew Milder

Technology Areas

Primary:

- TX04 Robotic Systems
  - TX04.5 Autonomous Rendezvous and Docking
    - TX04.5.1 Relative Navigation Sensors